



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,416	06/04/2001	Curt Zimmermann	2001-0662A	3348
513	7590	09/25/2006	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P.			LEWIS, PATRICK T	
2033 K STREET N. W.				
SUITE 800			ART UNIT	
WASHINGTON, DC 20006-1021			PAPER NUMBER	
			1623	

DATE MAILED: 09/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/857,416

Applicant(s)

ZIMMERMANN ET AL.

Examiner

Patrick T. Lewis

Art Unit

1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Request for Continued Examination***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 14, 2006 has been entered.

### ***Applicant's Response Dated February 14, 2006***

2. Claims 10-16 are pending. An action on the merits of claims 10-16 is contained herein below.
3. The rejection of claims 1-9 under 35 U.S.C. 112, second paragraph, has been rendered moot in view of applicant's amendment dated February 14, 2006.
4. The rejection of claims 1-9 under 35 U.S.C. 103(a) as being unpatentable over Krasik *Tetrahedron Letters* (1998), Vol. 39, pages 4223-4226 (Krasik) in combination with Algieri et al. US 4,927,968 (Algieri) and Schaefer et al. US 5,380,794 (Schaefer) has been rendered moot in view of applicant's amendment dated February 14, 2006.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasik Tetrahedron Letters (1998), Vol. 39, pages 4223-4226 (Krasik) in combination with Eckhardt et al. US 4,806,619 (Eckhardt), Algieri et al. US 4,927,968 (Algieri) and Schaefer et al. US 5,380,794 (Schaefer).

Claims 10-14 are drawn to a process for preparing glyoxylic ester comprising transesterifying a glyoxylic ester hemiacetal directly with an alcohol in the presence of a dialkyltin catalyst and then cleaving the transesterified hemiacetal to give the free glyoxylic ester or its hydrate. Claims 15-16 are drawn to a process for preparing glyoxylic ester comprising converting a glyoxylic ester hemiacetal into the corresponding glyoxylic ester acetal, transesterifying said acetal in the presence of a dialkyl tin

catalyst, and cleaving the transesterified acetal to the to give the free glyoxylic ester or its hydrate.

Krasik teaches the transestrification of glyoxylic ester acetals using titanium (IV) ethoxide as a catalyst (Page 4223; page 4225, Table 3). Using titanium (IV) alkoxide as a catalyst allows transesterification to be carried out under neutral conditions compatible with a large variety of acid and base sensitive functional groups. Menthyl esters were generated in clean high yielding reactions with no significant by-products. Titanium (IV) alkoxides have also been used to prepare esters of primary and secondary alcohols.

Krasik differs from the instantly claimed invention in that: 1) Krasik does not explicitly teach converting a glyoxylic ester hemiacetal into the corresponding acetal prior to transesterification; 2) Krasik does not explicitly teach the deprotection of the aldehyde moiety (acid hydrolysis of acetals). However, transesterification and removal of acetal protecting groups were very common and routine procedures for one of ordinary skill in the art at the time of the instant invention.

Eckhardt teaches that titanium oxides and dialkyltin dicarboxylates are useful catalyst in transesterification reactions (column 4, lines 16-43).

Schaefer teaches that acetals are formed by the well-known reaction between aldehydes and alcohols (column 2, lines 45-54). The addition of one molecule of an alcohol to one molecule of an aldehyde produces a hemiacetal. Hemiacetals are rarely isolated, because of their inherent instability, but rather, are further reacted with another molecule of alcohol to form a stable acetal.

Algieri teaches that aldehydes are prepared from the acid hydrolysis of acetals (column 4, lines 39-52). The hydrolysis reaction may be conducted in a non-reactive solvent such as methanol, ethanol, tetrahydrofuran and aqueous mixtures thereof in the presence of an organic or inorganic acid for example, hydrochloric acid, sulfuric acid, formic acid and p-toluenesulfonic acid.

It would have been obvious to one of ordinary skill in the art at the time of the invention to prepare glyoxylic esters by first converting a glyoxylic ester hemiacetal into the corresponding glyoxylic ester acetal and then transesterifying it with an alcohol in the presence of a dialkyltin catalyst. Although, Krasik does not explicitly teach the conversion of a hemiacetal into the corresponding acetal prior to transesterification, to do so would have been obvious. It is well known in the art that hemiacetals, used to protect aldehyde moieties, are unstable and are usually further converted into the more stable corresponding acetal for use in multi-step chemical reactions. The inherent instability of hemiacetals and general method by which acetals are prepared would have provided motivation to convert a glyoxylic ester hemiacetal into the corresponding acetal prior to transesterification. The use of a dialkyltin catalyst would have been obvious as the prior art teaches that tin and titanium catalyst are effective transesterification catalyst. It would have also been obvious to one of ordinary skill in the art at the time of the invention to remove the protecting groups (acetal/hemiacetal) by acid hydrolysis as that is the standard method for doing so. The use of acetals/hemiacetals as protecting groups is widely known in the art. The removal of conventional protecting groups is seen to be well within the purview of one of ordinary skill in the art. Once the general

Art Unit: 1623

reaction has been shown to be old, the burden is on the applicant to present reason or authority for believing that a group on the starting compound would take part in or affect the basic reaction and thus alter the nature of the product or the operability of the process and thus the unobviousness of the method of producing it.

### ***Conclusion***

8. Claims 10-16 are pending. Claims 10-16 are rejected. No claims are allowed.

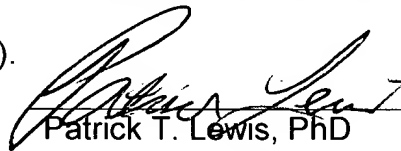
### ***Contacts***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick T. Lewis whose telephone number is 571-272-0655. The examiner can normally be reached on Monday - Friday 10 am to 3 pm (Maxi Flex).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1623

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick T. Lewis, PhD  
Primary Examiner  
Art Unit 1623

ptl